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A NEW TOADFISH OF THE GENUS *PORICHTHYS* FROM CARIBBEAN PANAMA

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David K. Caldwell

Editor

A NEW TOADFISH OF THE GENUS *PORICHTHYS* FROM CARIBBEAN PANAMA

By David K. Caldwell[1] *and* Melba C. Caldwell[2]

Abstract: A new species of toadfish, *Porichthys pauciradiatus*, is described from Caribbean Panama in Caledonia Bay. Its relationship to other recorded forms in this genus is discussed.

In April, 1939, the Allan Hancock Foundation research vessel Velero III, under the direction of Captain Hancock, made a short cruise to the southern Caribbean sea. Details of this cruise were given by Garth (1945), and a list of the fishes collected is now in press (Caldwell and Caldwell, *In Press*). In preparing the list of fishes, we found seven specimens from Panama which represent an undescribed species of the genus *Porichthys*, family Batrachoididae. This form may now be known as:

Porichthys pauciradiatus, New Species

Figures 1-3.

Diagnosis: A species of *Porichthys*, as discussed by Hubbs and Schultz (1939), distinguished by a low number (27-28) of anal fin-rays and a correspondingly low number (29-31) of dorsal fin-rays.

Description: Dorsal II-29 (II-29 to 31)[3]; anal 28 (27 in four, 28 in two); pectorals 14-14 (14-14 to 15-15); pelvics I, 2 (I, 2).

Palatine teeth caninelike, slightly curved backward, about 6 to 10 in the single series on each side, the anteriormost teeth strongest; vomerine canine teeth 1 or 2 at each outer angle of bone, teeth strong, slightly curved backward; premaxillary teeth finely caninelike; mandibular teeth biserial anteriorly, with the inner row continued backward as strong canines. Peritoneum dark. The pattern of pigmentation (consisting primarily of 8 dorsal saddles) is shown in the figures accompanying this paper and these should be considered as part of the description. The fins were colorless.

Measurements in thousandths of the standard length for the holotype and (in parentheses) for three of the paratypes 18.5 to 34.5 mm. in standard length: Greatest body depth, 186 (190-207); distance from tip of snout to origin of soft dorsal fin, 354 (341-368); distance from tip of snout to origin of spinous dorsal fin, 289 (277-292); distance from tip of chin to anus, 410 (385-436); length of head, 307 (286-335); interorbital width, 59 (46-50); length of orbit, 44 (55-62); length of upper jaw, 165 (152-176); length of

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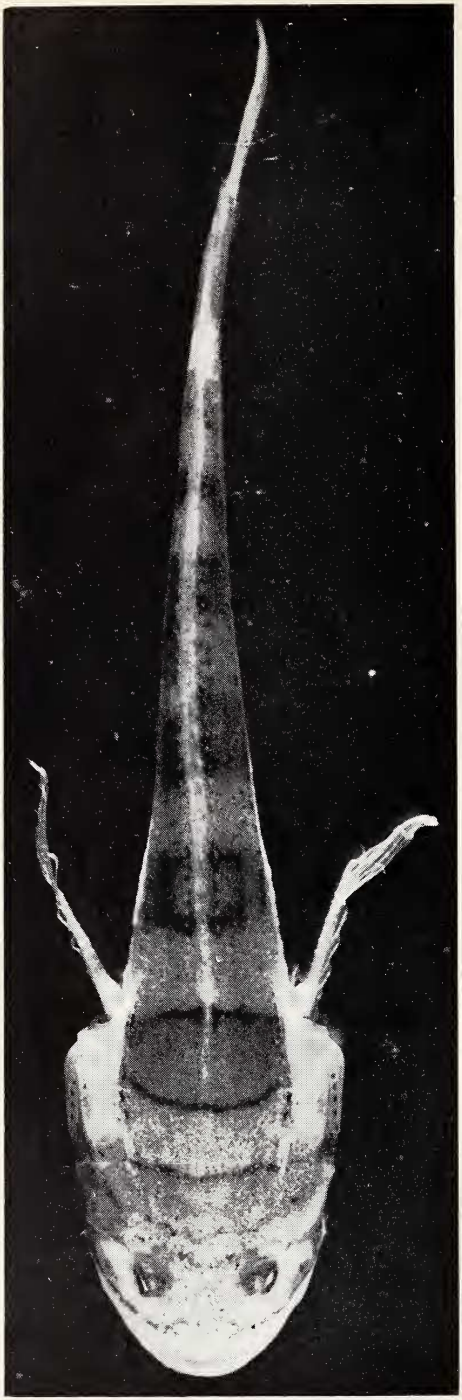
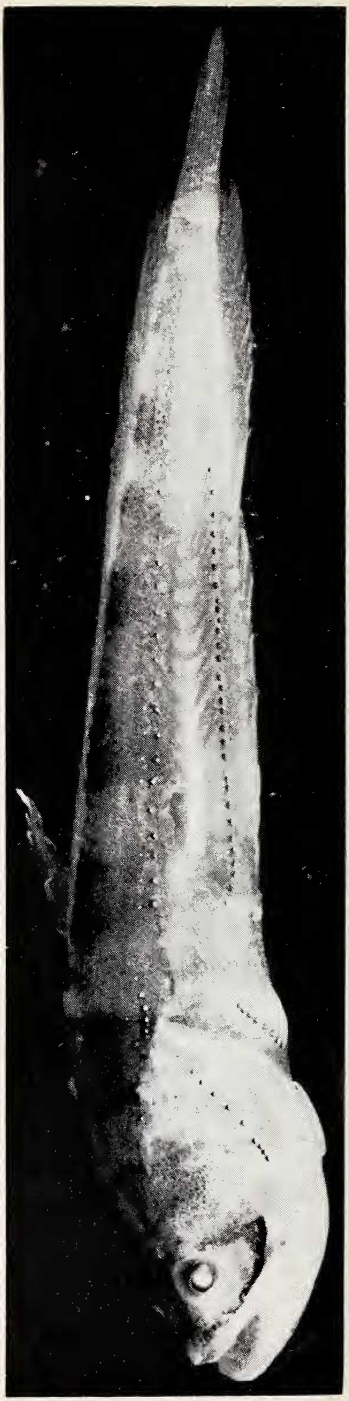
[3]Counts in parentheses are for the six paratypes.





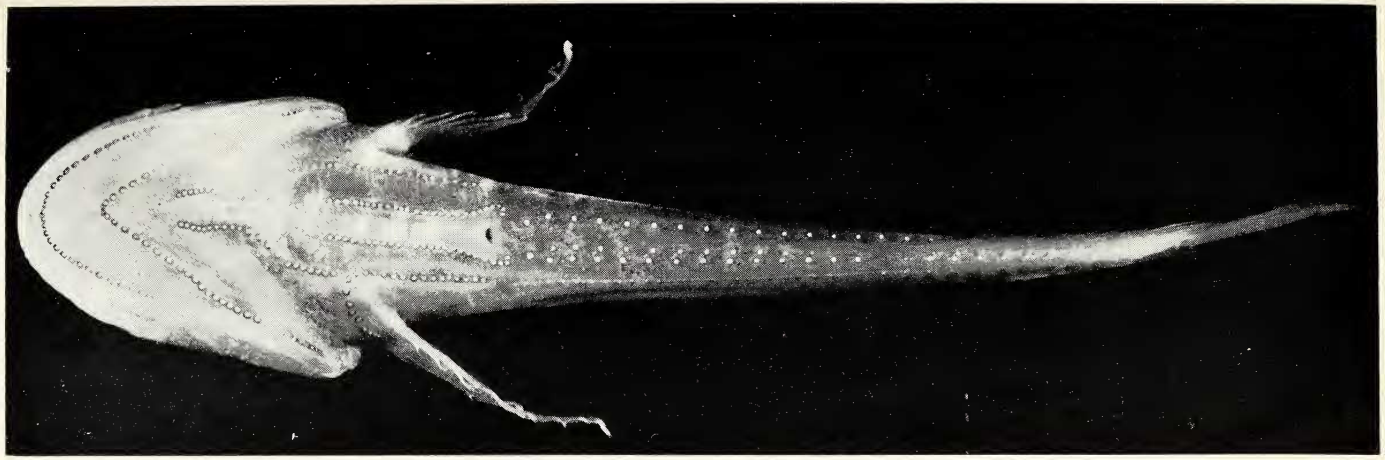


Fig. 1. *Porichthys pauciradiatus,* new species. Dorsal view of the holotype, 33.9 mm. standard length, AHF 3037. (Photograph by Armando Solis, Los Angeles County Museum).

Fig. 2. *Porichthys pauciradiatus,* new species. Lateral view of the holotype, 33.9 mm. standard length, AHF 3037. The tip of the right pectoral fin should not be misinterpreted as being an extended anterior part of the dorsal fin. There is no such extension. (Photograph by Armando Solis).

Fig. 3. *Porichthys pauciradiatus,* new species. Ventral view of the holotype, 33.9 mm. standard length, AHF 3037. (Photograph by Armando Solis).

snout, 50 (47-62); distance from tip of lower jaw to anteriormost point of the V-shaped forward extension of the branchiostegal row of photophores, 84 (70-95).

Holotype: University of Southern California, Allan Hancock Foundation fish collection (AHF) 3037, 33.9 mm. in standard length, dredged at VELERO III station A 7-39, April 4, 1939, in Caledonia Bay, Panama (8° 53′ 03″ N, 77° 41′ 20″ W). Depth one to five fathoms, hard sand bottom.

Paratypes: AHF 2766, six specimens, 18.4 to 34.3 mm. standard length, collected with the holotype.

Relationships: From all of the described forms of the genera *Porichthys* and *Nautopaedium,* as recognized by Hubbs and Schultz (1939), *P. pauciradiatus* differs in its low number of anal fin rays. Its average number of dorsal fin-rays is correspondingly low. In the event that *P. nautopaedium* Jordan and Bollman (1890: 171) is proved valid, *P. pauciradiatus* differs from it as well in having fewer dorsal and anal fin-rays. Hubbs and Schultz (1939: 486), although placing *P. nautopaedium* in the synonymy of *P. margaritatus,* did so with hesitancy. For reasons noted below, we also feel that *P. nautopaedium* may be valid.

Hubbs and Schultz (p. 484) listed three small specimens of a *Porichthys* from Cape San Lucas, Baja California, Mexico, that were in such poor condition that they did not assign them a specific name. The three specimens were characterized by their low dorsal and anal fin-ray counts. Hubbs and Schultz felt (1) that their material either was true *P. margaritatus,* in which case the name *P. nautopaedium* would have to be assigned to the group they called *P. margaritatus,* (2) that their specimens were aberrant *P. notatus* or a subspecies of it, or (3) that they represented an undescribed species. Inasmuch as Richardson (1844: 67) gave a count of only 26 anal fin-rays and 34 dorsal fin-rays (33 in his figure) in his original description of *P. margaritatus* from the Gulf of Fonseca in Pacific Central America, we think that the *Porichthys* "species" of Hubbs and Schultz should bear the name *P. margaritatus,* as they suggested, and that their *P. margaritatus* should be assigned the alternative name of *P. nautopaedium,* which those writers also suggested. Our discovery of a series of well-preserved specimens of an unidentified species with a low anal and dorsal fin-ray count shows (1) that Richardson was probably not in error in listing only 26 anal fin-rays for his *P. margaritatus,* and (2) that the *Porichthys* "species" of Hubbs and Schultz probably were not aberrant in their possession of low anal and dorsal fin-ray counts.

We think that *P. pauciradiatus* is nearer the *Porichthys* "species" of Hubbs and Schultz, discussed above, than to any other member of the genus. It is conceivable that additional material of both populations—from the Caribbean side of Central America at Caledonia Bay, Panama, and from the Pacific side at Cape San Lucas, Baja California—may indicate that they are only subspecifically distinct. At present, the primary differences seem to be the number of

dorsal saddles (8 in *P. pauciradiatus,* 6 in *Porichthys* "species") and the fact that *P. pauciradiatus* apparently has an incomplete row of pleural photophores while *Porichthys* "species," according to Hubbs and Schultz (p. 484) seems to have a complete or nearly complete row. From *P. margaritatus,* as described by Richardson, *P. pauciradiatus* differs in possessing fewer pectoral fin-rays (14 to 15 in *P. pauciradiatus,* 16 in *P. margaritatus*) and fewer dorsal fin-rays (29 to 31 in *P. pauciradiatus,* 33 or 34 in *P. margaritatus*).

In its **V**-shaped branchiostegal row of photophores, *P. pauciradiatus* further differs from *Nautopaedium porosissimum, Porichthys myriaster* and *P. greenei*—see Hubbs and Schultz (1939: fig. 57).

P. pauciradiatus also differs from *P. greenei* in having its dorsal and anal fins free from the caudal.

In addition, *P. pauciradiatus* differs further from *P. analis, P. margaritatus* (as recognized by Hubbs and Schultz) and perhaps from *Porichthys* "species" of Hubbs and Schultz in having its pleural row of photophores apparently ending abruptly above the end of the second third of the anal fin base (see discussion above).

We compared our material with similar-sized specimens of all of the species recognized by Hubbs and Schultz, with the exception of their *Porichthys* "species," and find that none have the color pattern of *P. pauciradiatus* (see Figs. 1-3). In no case were the dorsal saddles of the other forms as distinct as they were in *P. pauciradiatus,* nor did they appear to be as sharply outlined with dark pigment.

Remarks: our specimens were small, and their premaxillary and palatine teeth were directed backward. We found the same condition in small specimens of *Nautopaedium porosissimum* that we examined. On the basis of this, and like Hubbs and Schultz (1939: 489), we question the validity of *Nautopaedium* as a distinct genus based solely on the angle of direction of these teeth. However, presuming that *Nautopaedium* continues to be recognized as a valid genus, and that our small specimens are correctly assigned to the genus *Porichthys, P. pauciradiatus* is the first representative of its genus in the Atlantic. According to Hubbs and Schultz (1939: 473), the other species in the genus *Porichthys* are confined to the eastern Pacific.

Derivation of New Name: From the Latin *pauci,* meaning few, and *radiatus,* meaning rayed; in reference to the reduced number of dorsal and anal fin-rays characteristic of the new species.

Comparative Material Examined: Each lot of material contained at least one specimen of a size comparable to our specimens of *P. pauciradiatus.*

Porichthys myriaster Hubbs and Schultz

Three specimens, University of California, Los Angeles, fish collection (UCLA), W 51-129, from Corona del Mar, Orange County, California.

Porichthys analis Hubbs and Schultz

Twelve specimens, UCLA, W 50-191, from near San Felipe, Baja California (Gulf of California), Mexico.

Porichthys notatus Girard

Five specimens, California Academy of Sciences (CAS) 19905, from San Pablo Bay, Marin County, California.

Porichthys margaritatus Richardson (of Hubbs and Schultz)—may be *P. nautopaedium* Jordan and Bollman

Two specimens, CAS 6857, from La Libertad, Ecuador.

Porichthys greenei Gilbert and Starks

Thirteen specimens, Stanford University Natural History Museum (SU) 6485 (type), and SU 6512 (paratypes) from Panama Reef, Panama.

Nautopaedium porosissimum (Valenciennes)

Five specimens, United States National Museum 83833, from 34° 35′ 30″ N, 75° 45′ 30″ W, off North Carolina.

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